REMARKS

Favorable reconsideration of the application is respectfully requested in light of the amendments and remarks herein.

Upon entry of this amendment, claims 1-48 will be pending. By this amendment claims 1-6, 8-9, 11, 14-35, and 37-48 have been amended. No new matter has been added.

Objections to the Specification

In Section 1 of the Office Action, the Examiner has objected to the Abstract of the Disclosure in the Specification. The Abstract of the Disclosure has been replaced, obviating the objection. Accordingly, it is respectfully requested that this objection be withdrawn.

Objection to Claims 1-48

In Sections 2 and 3 of the Office Action, the Examiner has objected to claims 1-48 because of informalities. Relevant claims have been amended, obviating this objection. Accordingly, it is respectfully requested that this objection be withdrawn.

§112 Rejection of Claims 1-48

In Sections 4-9 of the Office Action, the Examiner has rejected claims 1-48 under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-6, 8-9, 11, 14-35, and 37-48 have been amended, thereby obviating this rejection. Accordingly, it is submitted that the Examiner's rejection of claims 1-48 based upon 35 U.S.C. § 112 has been obviated and withdrawal thereof is respectfully requested.

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§ 102 Rejection of Claims 1-3, 14, 25-27 and 38

In Section 10 of the Office Action, the Examiner has rejected claims 1-3, 14, 25-27 and

38 under 35 U.S.C. §102(e) as being anticipated by Van Stralen *et al.* (U.S. Patent 6,304,996 B1;

hereinafter referred to as "Van Stralen"). This rejection is respectfully traversed below.

Independent claims 1 and 25, as presented herein, recite decoding system and method for

"providing relatively high likelihood of obtaining at least two paths of getting to each decoding

state from at least three paths, and for selecting a maximum likelihood path from said at least two

paths, wherein a log likelihood of getting to a state in the decoder is determined by a soft-input

value encoded with a trellis so as to provide at least three paths for getting to the state." *Claim 1;*

claim 25. Figure 8 illustrates the disclosed trellis used for encoding.

Van Stralen, however, discloses a decoder for decoding received value encoded with a

trellis in which there are only two paths for getting to each encoding state. For example, in

Column 5 of Van Stralen, only two values for *a priori* bit probabilities, Apt(0) and Apt(1), are

disclosed. Figure 3 shows a block diagram with alpha and beta blocks of a turbo decoder but

fails to show a trellis for an encoder. Van Stralen assumes that only one bit is received rather

than having two bits encoded in time. Further, the switches 54 and 56, illustrated in Figures 4A

and 4B of Van Stralen, are configured to select two output signals from two input signals, which

are configured differently from the structure of the path selection means in the decoder of claim

1.

Based on the foregoing discussion, it is submitted that claims 1 and 25 are not anticipated

by the teachings of Van Stralen. Accordingly, since claims 2-3 and 14, and 26-27 and 38 depend

from claims 1 and 25, respectively, it is submitted that the Examiner's rejection of claims 1-3,

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14, 25-27 and 38 based upon 35 U.S.C. §102(e) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§ 103 Rejection of Claims 4, 5, 15-24, 28, 29 and 39-48

In Section 11 of the Office Action, the Examiner has rejected claims 4, 5, 15-24, 28, 29 and 39-48 under 35 U.S.C. §103(a) as being anticipated over Van Stralen in view of Benedetto *et al.* (S. Benedetto, D. Divsalar, G. Montorsi, and F. Pollara, Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes, TDA Progress Report 42-124, NASA Code 315-91-20-20-53; hereinafter referred to as "Benedetto"). This rejection is respectfully traversed below.

It was disclosed in the discussion above that independent claims 1 and 25, as presented herein, recite decoding system and method for "providing relatively high likelihood of obtaining at least two paths of getting to each decoding state from at least three paths, and for selecting a maximum likelihood path from said at least two paths, wherein a log likelihood of getting to a state in the decoder is determined by a soft-input value encoded with a trellis so as to provide at least three paths for getting to the state." *Claim 1; claim 25.* Since claims 4, 5, and 15-24 depend from claim 1, and claims 28, 29, and 39-48 depend from claim 25, claims 4, 5, 15-24, 28, 29 and 39-48 include all the limitations of claim 1 or claim 25.

It was also disclosed in the discussion above that Van Stralen, however, discloses a decoder for decoding received value encoded with a trellis in which there are only two paths for getting to each encoding state. For example, in Column 5 of Van Stralen, only two values for *a priori* bit probabilities, Apt(0) and Apt(1), are disclosed. Figure 3 shows a block diagram with alpha and beta blocks of a turbo decoder but fails to show a trellis for an encoder. Van Stralen assumes that only one bit is received rather than having two bits encoded in time. Further, the

switches 54 and 56, illustrated in Figures 4A and 4B of Van Stralen, are configured to select two output signals from two input signals, which are configured differently from the structure of the path selection means in the decoder of claim 1. Since Benedetto was indicated as teaching comparison of absolute values according to the outcome of comparison of likelihood computations, Van Stralen and Benedetto, individually or in combination, still fail to teach or suggest the decoding structure and method of claims 1-48.

Based on the foregoing discussion, it is submitted that claims 4, 5, 15-24, 28, 29 and 39-48 are not rendered obvious by the teachings of Van Stralen and Benedetto. Accordingly, it is submitted that the Examiner's rejection of claims 4, 5, 15-24, 28, 29 and 39-48 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§ 103 Rejection of Claims 6, 9, 10, 12, 13, 30, 33, 34, 36 and 37

In Section 12 of the Office Action, the Examiner has rejected claims 6, 9, 10, 12, 13, 30, 33, 34, 36 and 37 under 35 U.S.C. §103(a) as being unpatentable over Van Stralen and Benedetto in view of XP-000888685 ("Simplified Log-Map Algorithm", Research Disclosure, Kenneth Mason Publications, Hampshire, GC, No. 421, May 1999, Page 612, ISSN: 0374-4353; hereinafter referred to as "XP-000888685"). This rejection is respectfully traversed below.

It was disclosed in the discussion above that independent claims 1 and 25, as presented herein, recite decoding system and method for "providing relatively high likelihood of obtaining at least two paths of getting to each decoding state from at least three paths, and for selecting a maximum likelihood path from said at least two paths, wherein a log likelihood of getting to a state in the decoder is determined by a soft-input value encoded with a trellis so as to provide at

least three paths for getting to the state." *Claim 1; claim 25.* Since claims 6, 9, 10, 12, and 13 depend from claim 1, and claims 30, 33, 34, 36, and 37 depend from claim 25, claims 6, 9, 10, 12, 13, 30, 33, 34, 36, and 37 include all the limitations of claim 1 or claim 25.

Further, it was disclosed in the discussion above that Van Stralen, however, discloses a decoder for decoding received value encoded with a trellis in which there are only two paths for getting to each encoding state. For example, in Column 5 of Van Stralen, only two values for *a priori* bit probabilities, Apt(0) and Apt(1), are disclosed. Figure 3 shows a block diagram with alpha and beta blocks of a turbo decoder but fails to show a trellis for an encoder. Van Stralen assumes that only one bit is received rather than having two bits encoded in time. Furthermore, the switches 54 and 56, illustrated in Figures 4A and 4B of Van Stralen, are configured to select two output signals from two input signals, which is configured differently from the structure of the path selection means in the decoder of claim 1.

Since Benedetto was indicated as teaching comparison of absolute values according to the outcome of comparison of likelihood computations, Van Stralen and Benedetto, individually or in combination, fail to teach or suggest the decoding structure and method of claims 1-48. It was further disclosed that document XP-000888685 teaches that $B=4=2^2$. Therefore, Van Stralen, Benedetto, and document XP-000888685, individually or in combination, still fail to teach or suggest the decoding structure and method of claims 1-48.

Based on the foregoing discussion, it is submitted that claims 6, 9, 10, 12, 13, 30, 33, 34, 36 and 37 are not rendered obvious by the teachings of Van Stralen, Benedetto and XP-000888685 as presented and referenced by the Examiner. Accordingly, it is submitted that the Examiner's rejection of claims 6, 9, 10, 12, 13, 30, 33, 34, 36 and 37 based upon 35 U.S.C.

§103(a) has been overcome by the present remarks and withdrawal thereof is respectfully

requested.

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CONCLUSION

In view of the foregoing, entry of this amendment, and the allowance of this application with claims 1-48 are respectfully solicited.

In regard to the claims amended herein and throughout the prosecution of this application, it is submitted that these claims, as originally presented, are patentably distinct over the prior art of record, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. Changes that have been made to these claims were not made for the purpose of patentability within the meaning of 35 U.S.C. §§101, 102, 103 or 112. Rather, these changes were made simply for clarification and to round out the scope of protection to which Applicant is entitled.

In the event that additional cooperation in this case may be helpful to complete its prosecution, the Examiner is cordially invited to contact Applicant's representative at the telephone number written below.

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with the above-identified application to Deposit Account 50-0320.

Respectfully submitted,

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